

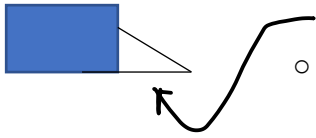
## Meeting Minutes 1-29

### Present:

- Emily
- Jake
- Dr. Rezaie
- Dr. Swenson
- Melissa
- Ray

### Off the ground Pros and Cons

- Pros
  - There needs to be something under the box in order to attach the supports because we can't drill into the concrete
  - The box will still be symmetric because the bottom section would have the air on the bottom and the top would have the air in the top with both having the middle as the "ground"
- Cons
  - Sagging is still a concern
    - We could use a big piece of plywood?
    - We could also turn the 2x6 boards on their sides to have greater surface area holding it up



### Drawing

Needs to have more detailed connector information

### Analysis

- Using a factor of safety of 2.5 for a modulus of Rupture for plywood of 4890 psi and considering .5 inch plywood
  - If building wooden supports like drawing
    - We would need 4 supports on the long sides of the box and 2 supports on the shorter ends (max distance between to prevent rupture from bending stress is 24")
    - The force on the support would be 84 lbf/in horizontally (would be higher for total force in beam because the beam is at angle) for middle support beam for the 24" it supports and the 2x6 beam the end stress is 168 psi, well below the 1350 psi max
    - Total estimated cost for supports- \$250
  - If buying supports
    - We would need 28 supports total to accommodate the maximum of 11 inches in between
    - This would distribute force to accommodate the 1000 lb max on the shelving units
    - Total estimated cost for supports: \$400

- Bands
  - Each band costs \$15.49 with about \$15 shipping and handling
  - The break strength is 3333 lbs

#### Air Flow:

- There is a significant pressure drop across the box
- Longer boxes or higher velocities have higher pressure drop
- Still in progress

#### In general

- We need to show more clear visuals
- We need to clean up calculations to show to others
- To Do: by next week have presentation with visuals to show on design